GENETIC COUNSELORS' IMPLICIT RACIAL BIAS AND COGNITIVE, EMOTIONAL, AND INFORMATIONAL EXCHANGE IN SIMULATED SESSIONS

by
Chenery Lowe

A thesis submitted to Johns Hopkins University in conformity with the requirements for the degree of Master of Science

Baltimore, Maryland
December 2018

ABSTRACT

Objectives: Implicit racial bias has been shown to negatively affect several communication processes (Schaa et al., 2015), suggesting that bias is detrimental to the genetic counselor-client relationship and therefore impedes progress toward client-centered goals. This study extends previous research in the domains of implicit bias and interpersonal communication to identify possible directions for communication training and practice intervention.

Methods: Secondary analysis of a nationally representative sample of genetic counseling sessions with white and minority (Black and Latino) simulated clients (SCs) was conducted. A subset of the genetic counselors (GCs, n=60) completed a Race Implicit Association Test (IAT). The Roter Interaction Analysis System (RIAS) was used to characterize and code GC and SC communication behaviors and Linguistic Inquiry Word Count (LIWC) was applied to session transcripts to analyze SC talk. Main outcomes were SC cognitive and emotional processing, GC facilitation of cognitive and emotional processing, and GC's provision of personalized clinical information. Multiple linear regression analyses were performed to relate these outcomes to GCs' IAT scores, SC race, and statistical interaction between GCs' IAT scores and SC race.

Results: GCs' implicit racial bias had different effects on GCs' provision of information depending on SC race ($p<0.05$). For minority SCs, higher (more pro-white) IAT scores were associated with GCs being less likely to provide personally-framed clinical information relative to white SCs. GCs (n=60) used more cognitive facilitation strategies with minority than with white SCs ($p=0.04$).

Conclusions: Genetic counseling communication may reflect differential processes of individuation and categorization based on client race. Clinical as well as interpersonal communication may be sensitive to the effects of GCs' implicit racial bias. The relationship between client race and cognitive, affective, and informational exchange in genetic counseling sessions is complex.

Keywords: Implicit attitudes, Race/ethnicity, RIAS, Patient-provider communication, LIWC

Thesis Committee Members:
Debra L. Roter, DrPH (Advisor)
Mary Catherine Beach, MD, MPH
Julie S. Cohen, ScM, CGC
Susan J. Persky, PhD

Thesis Readers:
Debra L. Roter, DrPH
Mary Catherine Beach, MD, MPH

ACKNOWLEDGEMENTS

To my thesis advisor, Debra Roter: Thank you for your steadfast belief in me and in this project. Your enthusiasm, encouragement, and thoughtful feedback helped me to grow as a researcher and critical thinker and helped me stay motivated!

To my thesis committee and readers, Mary Catherine Beach, Julie Cohen, and Susan Persky: Thank you for offering your time, expertise, curiosity, and feedback throughout the development of my thesis.

To those who shared data and guidance on this project – Kimberly M. Kelly, Lee Ellington, Lori Erby, and Kendra Schaa: This study would have been impossible without your contributions. Thank you for your willingness to help.

To my classmates – Ahna Neustadt, Alexa Geltzeiler, Yingyue Li, and Katherine Anderson: I treasure your friendship and the experiences we have had together over the past two and a half years. We have supported each other from day one and you each continue to inspire me.

To my family and friends: Thank you for your unconditional love, support, and encouragement!

In memory of my grandfather, Albert Lowe: A champion of diversity and social justice.

Special thanks to my program directors, Lori Erby, Megan Cho, and Barb Biesecker: The past two and a half years have been a transformative experience. I am so grateful to each of you for creating the conditions for growth in this program and helping me to discover and develop my strengths.

Additional thanks to: The faculty of the JHU/NHGRI genetic counseling training program.

This research was supported by the Intramural Research Program of the National Human Genome Research Institute, National Institutes of Health.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ORGANIZATION OF THIS THESIS

Chapter 1 provides an overview of the thesis and presents relevant background, significance, specific aims, and study hypothesis. A brief overview of study methods is also presented.

Chapter 2 presents a study manuscript that explores the relationship between genetic counselors' implicit racial bias and facilitation of simulated clients' cognitive and emotional processing.

Chapter 3 presents a study manuscript that explores the relationship between genetic counselors' implicit racial bias and their use of communication processes that reflect individuation or generalization.

Chapter 4 presents clinical implications of the study findings and future directions for this research.

CHAPTER ONE: EXECUTIVE SUMMARY

BACKGROUND

Implicit bias is the unconscious negative evaluation of a person based on his or her actual or presumed group membership (FitzGerald & Hurst, 2017). Individuals make both implicit and explicit evaluations of members of specific social groups. Although implicit and explicit biases are related, most often the relationship is small (Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005). Explicit bias is thought to be influenced more by recent experiences, cognitively controlled responses to stimuli, and motivation to overcome prejudice. By contrast, implicit bias is thought to reflect automatic processes that are especially susceptible to early childhood experiences, affective experiences, cultural biases, and self-concept (Rudman, 2004).

Implicit bias can be especially damaging toward marginalized populations, who also face systemic forms of prejudice. In health care settings, implicit bias contributes to health disparities in both direct and indirect ways (Zestcott, Blair, & Stone, 2016). Several studies have shown that implicit bias can directly influence the decisions that health care providers make about patient care, leading to worse health outcomes (Hall et al., 2015) and it may indirectly lead to worse health outcomes by negatively influencing communication with patients, leading to decreased trust, engagement, and adherence to treatment.

This thesis builds on an earlier national study of implicit racial bias among genetic counselors (GCs) concluding that – like others, including health care professionals – GCs show a moderate to strong pro-white implicit bias, measured by the Race Implicit Association Test (Schaa et al., 2015). Furthermore, the study found that, when counseling minority simulated clients, GCs with stronger pro-white implicit racial

bias showed less positive affect and less use of emotionally responsive communication, suggesting that GC implicit bias negatively affects communication practices associated with a therapeutic relationship.

By conducting a secondary analysis of data collected in the earlier study, the thesis was designed to extend the scope of inquiry and broaden insights into the relationship between implicit racial bias and communication processes within the genetic counseling context.

SIGNIFICANCE OF THE THESIS

Ethnic minorities continue to be underrepresented in the genetic counseling profession, with 91% of GCs in the United States and Canada reporting their race as white (Baggett et al., 2016). Consequently, GCs frequently counsel race-discordant clients. Racially discordant medical interactions are associated with less patient-centered communication (Johnson, Roter, Powe, & Cooper, 2004) and lower patient satisfaction (Cooper et al., 2003). Health care providers' implicit racial biases may be an important aspect of racially discordant sessions, and preliminary research suggests implicit racial bias is prevalent among GCs and has negative effects on some aspects of interpersonal care (Schaa et al., 2015).

While several few interventions described in the medical literature have been designed to reduce health care providers' implicit bias and its negative effects on patient care (Zestcott et al., 2016), these have not addressed the goals of genetic counseling. The manuscripts presented in this thesis extend previous research in the domains of implicit bias and interpersonal communication to generate lines of inquiry for future intergroup

communications research in genetic counseling and to identify possible directions for communication training interventions.

SPECIFIC AIMS & HYPOTHESES

The purpose of this exploratory study was to examine the impact of implicit racial bias on GCs' communication in racially discordant interactions by applying concepts from general and intergroup communication theories. The thesis was designed to reflect the following specific aims and to investigate related exploratory hypotheses, as follows:

Aim 1: To examine the effect of implicit racial bias on elicitation of cognitive and emotional processing when counseling minority and white simulated clients.

Hypothesis 1*: Genetic counselors with higher pro-white implicit bias are less effective at facilitating cognitive and emotional processing when counseling minority simulated clients.*

Aim 2: To explore the effect of genetic counselors' pro-white bias on their provision of personalized versus generalized clinical information to simulated clients. Framing of clinical information in personal or general terms may reflect implicit attitudes regarding individuation. More personalized communication may reflect greater ability to relate to the unique rather than group attributes of the individual.

Hypothesis 2*: Genetic counselors with higher pro-white implicit bias provide less personalized information relative to generalized clinical information when counseling minority simulated clients.*

METHODS

Additional detail regarding procedures, measures, and data analyses can be found in the two manuscripts included in the thesis.

Procedures and Measures

Genetic Counseling Video Project. This study is a secondary analysis of a subset of 60 videotaped simulated genetic counseling sessions from a previous study of genetic counseling communication, the Genetic Counseling Video Project (Roter, Ellington, Erby, Larson, & Dudley, 2006). Briefly, GCs practicing in the U.S. and Canada were recruited from large national meetings in 2003 and 2004 and asked to participate in videotaped simulated counseling sessions.

Six simulated clients (SCs) were cross-trained to portray two client scenarios: (1) a pregnant woman of advanced maternal age seeking pre-amniocentesis counseling, and (2) a woman with a family history of breast and ovarian cancer seeking information about BRCA1/2 genetic testing. Female SCs included two Non-Hispanic White, two African American, and two Hispanic Latino actors. In half of the sessions, an ethnicity-matched male spouse accompanied the female SC. SCs performed with a high degree of accuracy and consistency over time (Erby, Roter, & Biesecker, 2011).

Implicit Association Test (IAT). Implicit racial bias was measured and reported previously in a study by Schaa and colleagues (2015) using the Project Implicit® Black:White Race Implicit Association Test (IAT). The current study uses these scores as an independent variable for the subset of 60 GCs for whom videotaped simulations were available.

Facilitation of Emotional and Cognitive Processing: Roter Interaction Analysis System (RIAS). RIAS coding is a widely used, reliable, and valid coding system applied to a variety of medical settings including genetic counseling (Roter et al., 2006; Roter & Larson, 2002). RIAS codes were combined to produce meaningful

categories to analyze GC communication during the simulated sessions. The current study follows Guan and colleagues' (2018) application of RIAS to identify GCs' facilitation of client communication indicative of emotional and cognitive processing.

Linguistic Inquiry Word Count (LIWC). Originally designed to analyze content of written narratives, LIWC has been used to analyze speech (Kahn, Tobin, Massey, & Anderson, 2007; Liess et al., 2008), including genetic counseling interactions (Ellington, Kelly, Reblin, Latimer, & Roter, 2011; Guan et al., 2018; Kelly et al., 2014, 2015). SC verbal communication consistent with cognitive and emotional processing was identified through application of the LIWC2015 software program (Pennebaker, Boyd, Jordan, & Blackburn, 2015). Emotional expression was identified by use of positive and negative emotion words. Cognitive integration and meaning-making were identified by use of words associated with cognitive processes, such as "think," "because," and "know."

Data Analyses

In brief, data were analyzed using R Statistical Software, version 3.5.0 (R Core Team, 2018). For all outcome variables, multiple linear regressions were performed with GC's IAT score, dichotomized client race (white or minority), and the interaction term between IAT score and dichotomized client race as the main predictors. Additional covariates included in the model were scenario (prenatal vs. cancer) and presence of spouse (absent or present). Presence of spouse was not significant in any of the adjusted models and was dropped as a covariate from the final models. Intraclass correlations coefficients were calculated to assess the effect of nesting GCs within SCs. When the intraclass correlation accounted for more than 10% of the variation in the outcome

variable, mixed effects models were assessed, but did not differ substantially from the fixed effects models. Therefore, fixed effects models are presented here. Effects of these covariates are presented as unstandardized coefficients.

SUMMARY OF RESULTS

Our hypotheses regarding Aim 1 were not supported. GCs' (n=60) IAT scores did not predict variation in their facilitation of cognitive and emotional processing, or in SCs' talk consistent with cognitive integration and emotional expression. We observed direct effects of race on GCs' communication. GCs used more cognitive facilitation strategies with minority than with white clients ($p=0.04$). While the relationship between GC emotional facilitation and SC race was not statistically significant in this sample, an exploratory analysis using the full GCVP dataset (n=140) showed that emotional facilitation accounted for more of GCs' talk with minority SCs than with white SCs ($p=0.01$, data not shown).

Our main hypothesis regarding Aim 3 was supported. For minority SCs, higher (more pro-white) IAT scores were associated with GCs being less likely to provide personally-framed clinical information relative to white SCs. We explored associations between GCs' IAT scores and components of patient-centered communication. Higher IAT scores were associated with GCs using fewer facilitation and activation statements ($p=0.04$) when counseling minority SCs, and with SCs providing less psychosocial and lifestyle information ($p<0.05$) and asking fewer medical questions ($p<0.01$).

REFERENCES

Baggett, L. M., Banks, K., D'Angelo, A., Graf, M. D., Ellingson, M. S., & Raymond, V. M. (2016). *Professional Status Survey: Work Environment* (p. 54). National Society of Genetic Counselors.

Cooper, L. A., Roter, D. L., Johnson, R. L., Ford, D. E., Steinwachs, D. M., & Powe, N. R. (2003). Patient-centered communication, ratings of care, and concordance of patient and physician race. *Annals of Internal Medicine*, *139*(11), 907–915.

Ellington, L., Kelly, K. M., Reblin, M., Latimer, S., & Roter, D. (2011). Communication in genetic counseling: cognitive and emotional processing. *Health Communication*, *26*(7), 667–675. https://doi.org/10.1080/10410236.2011.561921

Erby, L. A. H., Roter, D. L., & Biesecker, B. B. (2011). Examination of standardized patient performance: accuracy and consistency of six standardized patients over time. *Patient Education and Counseling*, *85*(2), 194–200. https://doi.org/10.1016/j.pec.2010.10.005

FitzGerald, C., & Hurst, S. (2017). Implicit bias in healthcare professionals: a systematic review. *BMC Medical Ethics*, *18*(1), 19. https://doi.org/10.1186/s12910-017-0179-8

Guan, Y., Roter, D. L., Wolff, J. L., Gitlin, L. N., Christensen, K. D., Roberts, J. S., … Erby, L. H. (2018). The impact of genetic counselors' use of facilitative strategies on cognitive and emotional processing of genetic risk disclosure for Alzheimer's disease. *Patient Education and Counseling*, *101*(5), 817–823. https://doi.org/10.1016/j.pec.2017.11.019

Hall, W. J., Chapman, M. V., Lee, K. M., Merino, Y. M., Thomas, T. W., Payne, B. K., … Coyne-Beasley, T. (2015). Implicit Racial/Ethnic Bias Among Health Care Professionals and Its Influence on Health Care Outcomes: A Systematic Review. *American Journal of Public Health*, *105*(12), e60-76. https://doi.org/10.2105/AJPH.2015.302903

Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A Meta-Analysis on the Correlation Between the Implicit Association Test and Explicit Self-Report Measures. *Personality and Social Psychology Bulletin*, *31*(10), 1369–1385. https://doi.org/10.1177/0146167205275613

Johnson, R. L., Roter, D., Powe, N. R., & Cooper, L. A. (2004). Patient Race/Ethnicity and Quality of Patient–Physician Communication During Medical Visits. *American Journal of Public Health*, *94*(12), 2084–2090. https://doi.org/10.2105/AJPH.94.12.2084

Kahn, J. H., Tobin, R. M., Massey, A. E., & Anderson, J. A. (2007). Measuring emotional expression with the Linguistic Inquiry and Word Count. *The American Journal of Psychology*, *120*(2), 263–286.

Kelly, K. M., Ellington, L., Schoenberg, N., Agarwal, P., Jackson, T., Dickinson, S., … Andrykowski, M. (2014). Linking Genetic Counseling Content to Short-Term Outcomes in Individuals at Elevated Breast Cancer Risk. *Journal of Genetic Counseling*, *23*(5), 838–848. https://doi.org/10.1007/s10897-014-9705-8

Kelly, K. M., Ellington, L., Schoenberg, N., Jackson, T., Dickinson, S., Porter, K., … Andrykowski, M. (2015). Genetic counseling content: How does it impact health behavior? *Journal of Behavioral Medicine*, *38*(5), 766–776. https://doi.org/10.1007/s10865-014-9613-2

Liess, A., Simon, W., Yutsis, M., Owen, J. E., Piemme, K. A., Golant, M., & Giese-Davis, J. (2008). Detecting emotional expression in face-to-face and online breast cancer support groups. *Journal of Consulting and Clinical Psychology*, *76*(3), 517–523. https://doi.org/10.1037/0022-006X.76.3.517

Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). The Development and Psychometric Properties of LIWC2015, 26.

R Core Team. (2018). R: A language and environment for statistical computing (Version 3.5.0). Vienna, Austria: R Foundation for Statistical Computing. Retrieved from https://www.R-project.org/.

Roter, D., Ellington, L., Erby, L. H., Larson, S., & Dudley, W. (2006). The Genetic Counseling Video Project (GCVP): models of practice. *American Journal of Medical Genetics. Part C, Seminars in Medical Genetics*, *142C*(4), 209–220. https://doi.org/10.1002/ajmg.c.30094

Roter, D., & Larson, S. (2002). The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions. *Patient Education and Counseling*, *46*(4), 243–251. https://doi.org/10.1016/S0738-3991(02)00012-5

Rudman, L. A. (2004). Sources of Implicit Attitudes. *Current Directions in Psychological Science*, *13*(2), 79–82.

Zestcott, C. A., Blair, I. V., & Stone, J. (2016). Examining the Presence, Consequences, and Reduction of Implicit Bias in Health Care: A Narrative Review. *Group Processes & Intergroup Relations : GPIR*, *19*(4), 528–542. https://doi.org/10.1177/1368430216642029

CHAPTER TWO: GENETIC COUNSELOR IMPLICIT BIAS AND ITS EFFECTS ON COGNITIVE AND AFFECTIVE EXCHANGES IN RACIALLY DISCORDANT SIMULATIONS

ABSTRACT

Objective: Previous studies have linked implicit racial bias with less patient-centered communication between health care providers and patients in a variety of medical care contexts. This study extends this research by exploring the influence of implicit racial bias in genetic counselors' (GCs') facilitation of simulated clients' (SC) cognitive and emotional processing during genetic counseling sessions.

Methods: Secondary analysis of a nationally representative sample of genetic counseling sessions conducted with white and minority (Black and Latino) SCs was conducted. A subset of the GCs completed a Race Implicit Association Test (IAT). Linguistic Inquiry Word Count (LIWC) was applied to session transcripts to identify client talk consistent with emotional and cognitive processing and the Roter Interaction Analysis System (RIAS) was used to identify GC talk consistent with facilitation of emotional and cognitive processing. Multiple linear regression analyses were performed to relate LIWC and RIAS variables to GCs' Race IAT scores, SC race, and statistical interaction between GCs' IAT scores and SC race.

Results: GCs (n=60) used more cognitive facilitation strategies with minority than with white clients (p=0.04). There were no statistically significant associations between GCs' pro-white implicit bias and clients' use of positive, negative, and cognitive process words, or GCs' facilitation of cognitive and emotional processing.

Conclusions: Our unexpected findings suggest a complex relationship between client race and cognitive and affective exchange in sessions.

INTRODUCTION

Implicit bias is the unconscious negative evaluation of a person based on his or her actual or presumed group membership (FitzGerald & Hurst, 2017). Implicit bias can be especially damaging toward marginalized populations, who also face systemic forms of prejudice, and may negatively influence communication with patients, leading to decreased trust, engagement, and adherence to treatment (Zestcott, Blair, & Stone, 2016). This may be especially important for genetic counseling, since genetic counselors' (GCs') responsiveness to cognitive and emotional processing may help clients to incorporate risk information, adhere to recommended management, and adapt to genetic risk and illness (Kelly et al., 2014, 2015).

Previous studies have demonstrated an association between the cognitive and affective content of genetic counseling sessions and client outcomes including uptake of cancer screening practices (Kelly et al., 2015) and knowledge (Kelly et al., 2014). Strategies by which GCs influence clients' cognitive and emotional expression have been identified as eliciting their opinions, asking open-ended questions, exploring psychosocial themes, and conveying empathy (Ellington, Kelly, Reblin, Latimer, & Roter, 2011; Guan et al., 2018)

Few studies have assessed the role of implicit bias in genetic counseling practice. Nevertheless, implicit bias may interfere with achievement of counseling goals if it inhibits development of a therapeutic relationship. In a study of simulated prenatal and cancer genetic counseling sessions, Schaa, Roter, Biesecker, Cooper, & Erby (2015) found that GCs with stronger pro-white implicit racial bias showed less positive affect and less use of emotionally responsive communication when they counseled minority

simulated clients. This study suggests that GC implicit bias may negatively affect communication practices related to affective expression, which may, in turn, prevent establishment of a therapeutic relationship.

The goal of the current study is to extend previous work by assessing the relationship between implicit racial bias and facilitation of cognitive and emotional processing, as previous studies have shown that cognitive integration and emotional expression are associated with better outcomes for genetic counseling clients (Kelly et al., 2014, 2015). Based on previous studies that show an association between pro-white bias and less patient-centered communication during medical visits with physicians (Cooper et al., 2012), we hypothesized that higher pro-white implicit racial bias would be associated with less facilitation of cognitive and emotional processing by GCs and less evidence of cognitive integration and emotional processing by minority simulated clients (SCs) relative to white SCs.

METHODS

Procedure

Genetic Counseling Video Project. This study is a secondary analysis of a subset of videotaped simulated genetic counseling sessions from a previous study of genetic counseling communication, the Genetic Counseling Video Project (Roter et al., 2006). Briefly, GCs practicing in the U.S. and Canada were recruited from large national meetings in 2003 and 2004 and asked to participate in videotaped simulated counseling sessions.

Six SCs were cross-trained to portray two client scenarios: (1) a pregnant woman of advanced maternal age seeking pre-amniocentesis counseling, and (2) a woman with a family history of breast and ovarian cancer seeking information about BRCA1/2 genetic testing. Simulated female clients included two Non-Hispanic white, two African American, and two Hispanic Latino actors. In half of the sessions, an ethnicity-matched male spouse accompanied the female SC. SCs performed with a high degree of accuracy and consistency over time (Erby, Roter, & Biesecker, 2011).

Implicit Association Test (IAT). Implicit racial bias was measured and reported previously in a study by Schaa and colleagues (2015) using the Project Implicit® Black:White Race Implicit Association Test (IAT). The current study uses these scores as an independent variable. The Race IAT is an indirect measure of racial implicit bias that has been widely used in other studies of health care professionals (Cooper et al., 2012; FitzGerald & Hurst, 2017; W. J. Hall et al., 2015). The IAT methodology is detailed elsewhere (Greenwald, Nosek, & Banaji, 2003). Briefly, the IAT score is based on an algorithm that calculates the standardized difference in mean response time in associating the target concept (Black or white race) with an attribute (word with a positive or negative connotation). The scores range from +2 (indicating high implicit pro-white bias) to -2 (indicating high implicit pro-Black bias), with zero indicating no relative implicit preference. Although the Black:White Race IAT specifically examines implicit bias toward Blacks relative to whites, it has been suggested that implicit bias toward Blacks may be associated with implicit bias toward other minority groups considered social "outgroups" (Greenwald, Poehlman, Uhlmann, & Banaji, 2009).

Facilitation of Emotional and Cognitive Processing: Roter Interaction Analysis System (RIAS). RIAS coding is a widely used, reliable, and valid coding system applied to a variety of medical settings including genetic counseling (Roter et al., 2006; Roter & Larson, 2002). RIAS codes were combined to produce meaningful categories to analyze GC communication. The current study follows Guan and colleagues' (2018) application of RIAS to identify GCs' facilitation of emotional and cognitive processing. To enhance comparability between simulated sessions in which the spouse was present and those in which he was absent, only GC talk directed to the client or to both client and spouse was included in these analyses. RIAS composite categories used to operationalize facilitation of emotional and cognitive processing are summarized in Table 1.

Linguistic Inquiry Word Count (LIWC). Originally designed to analyze content of written narratives, LIWC has been used to analyze speech (Kahn, Tobin, Massey, & Anderson, 2007; Liess et al., 2008), including genetic counseling interactions (Ellington et al., 2011; Guan et al., 2018; Kelly et al., 2014, 2015). For SC verbal communication, behaviors consistent with cognitive and emotional processing were identified by the LIWC2015 software program (Pennebaker, Boyd, Jordan, & Blackburn, 2015). Emotional expression was identified by use of positive and negative emotion words. Cognitive integration and meaning-making were identified by use of words associated with cognitive processes, such as "think," "because," and "know." Table 2 summarizes this application of LIWC categories to client talk.

The simulated sessions were transcribed from videotapes. Prepared transcripts for the cancer simulated sessions were available from a previous study (Ellington et al.,

2011). Using the same conventions, prenatal transcripts were prepared for the current study in accordance with the LIWC2015 operator's manual recommendations (Pennebaker et al., 2015), which include editing "filler" words without obvious significance such as "like" and "you know." Only SC talk was considered for analysis. Analysis was performed using the LIWC2015 library and preset linguistic categories for positive emotion, negative emotion, and cognitive processes.

Data Analyses

Data were analyzed using R Statistical Software, version 3.5.0 (R Core Team, 2018). For all outcome variables, multiple linear regressions were performed with GC's IAT score, dichotomized client race (white or minority), and the interaction term between IAT score and dichotomized client race as the main predictors. Additional covariates included in the model were scenario (prenatal vs. cancer) and presence of spouse (absent or present). Presence of spouse was not significant in any of the adjusted models and was not included as a covariate from the final models. Intraclass correlations coefficients were calculated to assess the effect of nesting GCs within SCs. For all analyses, intraclass correlation accounted for less than 10% of the variation in the outcome variable, so fixed effects models are presented here. Effects of these covariates are presented as unstandardized coefficients.

Client emotional and cognitive processing. Multiple linear regression analyses were performed with client negative emotion words (LIWC-based), client positive emotion words (LIWC-based), client cognitive process words (LIWC-based), GC emotional facilitation and responsiveness (RIAS-based), and GC cognitive facilitation (RIAS-based) as outcomes. Client negative emotion words were square root transformed

and client positive emotion words were natural log transformed to approximate a normal distribution.

RESULTS

Among 73 GCVP participants who completed the Race IAT, 60 had both interpretable IAT scores and had participated in a videotaped session that had been RIAS-coded. Of these, 58 had transcripts available for LIWC analysis. Participant flow through the study is summarized in Figure 1. Participants were predominately female (91.7%) and white (91.7%). Due to the small sample sizes, analyses did not adjust for GCs' gender or ethnicity. To maximize statistical power, SC ethnicity was dichotomized as either white (non-Hispanic white) or minority (African American and Hispanic/Latino).

Simulated Clients' Emotional and Cognitive Processing

Client negative emotion words. SCs used an average of 13 negative emotion words (s.d. = 10), accounting for 1.5% (s.d. =0.7%) of all client words. There was no significant difference between the number of negative emotion words used by white and minority clients ($p=0.52$). GCs' IAT score, client race, and IAT-race interaction were not significant predictors in the adjusted model, although clients used significantly more negative emotion words in the prenatal scenario relative to the cancer scenario ($\beta =-0.28$, $p<0.001$).

Client positive emotion words. SCs used an average of 34 positive emotion words (s.d. = 21), accounting for 4.3% (s.d. =1.9%) of all words. There was no significant difference in the number of positive emotion words used by white and

minority clients (p=0.24). In the adjusted model, GCs' IAT score, client race, and IAT-race interaction did not significantly predict variation in clients' use of positive emotion words, although clients used significantly more positive emotion words in the prenatal scenario relative to the cancer scenario (β =-0.23, p=0.04).

Client cognitive process words. SCs used an average of 121 cognitive process words (s.d. = 69), accounting for 14.9% (s.d. = 2.3%) of all words. There was no statistically significant difference in the number of cognitive process words used by white and minority clients (p=0.77). In the adjusted model, GCs' IAT score, client race, and IAT-race interaction did not significantly predict variation in clients' use of cognitive process words, although cognitive process words accounted for a significantly higher percentage of total words in the prenatal scenario relative to the cancer scenario (β =-1.36, p=0.03).

Genetic Counselors' Facilitation of Emotional and Cognitive Processing

GC emotional facilitation. GCs facilitated emotional processing and responded to the SC's emotions an average of 185 (s.d.=74) times per session, accounting for 26.5% (s.d.=5.7%) of all GC talk directed to the client. GC IAT score, client race, and scenario were not significant predictors in the adjusted model.

GC cognitive facilitation. GCs facilitated the SC's cognitive processing an average of 109 (s.d.=49) times per session, accounting for 15.6% (s.d.=4.6%) of all GC talk directed to the client. Cognitive facilitation accounted for 13.5% (s.d.=4.1%) of GCs' talk to white clients and 16.4% (s.d.=4.5%) of talk to minority clients. This difference was statistically significance (p=0.02). In the adjusted model, there was a trend toward

GCs using more cognitive facilitation with minority clients than with white clients (β=3.91, p=0.07).

DISCUSSION

We conducted analyses to explore the role of implicit racial bias as it relates to GCs' facilitation and elicitation of clients' cognitive and emotional processing. Previous studies revealed that implicit racial bias is associated with less emotionally responsive and patient-centered communication (Cooper et al., 2012; Schaa, Roter, Biesecker, Cooper, & Erby, 2015) and lower patient ratings of interpersonal care (Cooper et al., 2012). This study extends this body of research by connecting implicit racial bias to the processes through which GCs and clients work together to understand and integrate information about genetic risk. Using a scripted scenario allowed us to examine the relationship between implicit bias and client engagement in cognitive and emotional processing, while controlling for some of the variation based on clients' personal characteristics and indications for genetic counseling. To our knowledge, this is the first study of genetic counseling to explore the potential indirect effects of GCs' implicit racial bias on client behavior.

Previous studies had suggested that higher pro-white bias is associated with less patient-centered communication (Cooper et al., 2012; Schaa et al., 2015). We expected that higher implicit bias and client minority race would also predict less use of facilitative strategies. Unexpectedly, we found that GCs used more cognitive facilitation strategies with minority clients than with white clients. While our results do not necessarily contradict previous research on implicit bias and medical communication, they lead us to

reconsider how facilitative strategies may relate to the overarching concept and domains of patient centeredness.

Our measure of cognitive facilitation strategies included two components: partnering and activation statements and medical questions. We wondered if one of these components was more influential in explaining our results. Exploratory analyses found that GCs used more partnering and activation statements with minority clients, but asked no more medical questions (data not shown).

We found no differences by SC race in GCs' use of emotional facilitation strategies in this sample. However, we were curious whether this difference applied to the full dataset from the Genetic Counseling Video Project. In this larger sample (n=140), emotional facilitation accounted for more of GCs' talk with minority clients than with white clients (p=0.01, data not shown).

While there were no significant effects of IAT in the adjusted models, we do not rule out the possible influence of GCs' implicit bias on their use of cognitive and emotional facilitation strategies. As reported by Schaa and colleagues (2015), GCs in this sample had a moderate to strong degree of pro-white bias, so the direct effects of race may be conflated with implicit bias. If pro-white bias is conflated with client race in this study, it is difficult to explain why GCs use more facilitative strategies with minority clients despite most having some degree of pro-white bias. One possibility is that GCs' use of facilitative strategies reflects a compensatory response to their interactions with minority clients. J. Hall and colleagues (2015) found that female medical students with higher scores on a test of interpersonal accuracy, were more likely to use more facilitation and partnership statements, as identified by RIAS. Perhaps increased

attentiveness to contextual and nonverbal cues from minority clients has similar effects to higher interpersonal accuracy.

Conversely, GCs may have more trouble reading these cues and rely more on cognitive and emotional facilitation to make meaning explicit. At least one study has found that people are better at accurately decoding emotion in same-race faces than other-race faces (Elfenbein & Ambady, 2003). Perhaps this also applies to GCs' ability to recognize facial expressions and nonverbal cues about clients' thoughts and feelings. GCs may consciously or unconsciously attempt to mitigate the potential for mistrust and miscommunication through increased use of facilitation strategies.

LIMITATIONS

This is a secondary analysis of a dataset that was intended to generate hypotheses, but which is statistically underpowered to detect associations with small effects but potentially meaningful clinical implications. Since this sample of GCs was racially homogeneous, we were unable to assess effects of GC race on communication. Additionally, few GCs in the sample had pro-Black or neutral implicit bias on IAT, which limits our ability to identify patterns in communication for these individuals. We combined Black and Latino SCs into a single category to maximize statistical power, which limits our ability to detect a difference in relationships between IAT score and cognitive or emotional exchange between the Black and Latino subgroups. However, we reasoned that this approach was consistent with our conceptualization of Black:White implicit bias as potentially reflecting general in-group versus marginalized- or out-group social preferences (Greenwald et al., 2009). Additionally, previous studies have found

similar levels of implicit bias against both Blacks and Hispanics using separate IATs to evaluate both Black:White and Hispanic:White preferences among health care providers (Blair et al., 2013) and community members (Blair, Judd, Havranek, & Steiner, 2010; Blair et al., 2013).

CONCLUSION

While other studies have found associations between higher pro-white implicit racial bias and less patient-centered communication and lower patient satisfaction (Cooper et al., 2012; Schaa et al., 2015), this is one of few studies to examine its role in the affective and cognitive content of a healthcare visit. This study highlights the complexity of race in interpersonal communication. Our analyses suggest that client race may influence the cognitive and affective content of the session, although these effects were not in the hypothesized direction. These unexpected findings raise questions that may help to develop understanding of race and implicit bias in communication.

A larger study with more variation in GCs' degree of implicit racial bias could evaluate whether IAT is closely related to, or distinct from, factors influencing GCs' use of facilitative strategies. A more ethnically diverse sample of GCs could also help to untangle potential effects of race concordance and discordance. There is also a need to relate these findings to health outcomes. Previous studies have shown that counseling sessions with more cognitive and emotional content is associated with better health outcomes (Kelly et al., 2014, 2015), but these studies were conducted in a relatively homogeneous sample of Ashkenazi Jewish women at risk for breast and ovarian cancer.

Future studies might explore how communication differences moderate health outcomes for clients of diverse backgrounds.

Future research should address the unexpected direction of these results. In Chapter 3, we examine the effects of race and implicit bias on the construct and domains of patient centeredness. Future studies might also evaluate our theories about GCs' use of facilitation strategies to compensate for anticipated difficulties or in response to heightened attentiveness to minority clients' thoughts and feelings.

Table 1. Application of RIAS to GC Emotional and Cognitive Facilitation (adapted from Ellington et al., 2011)

GC Behavior	RIAS Composites	Dialogue examples
Emotional Facilitation and Responsiveness	• GC asks psychosocial questions • GC provides psychosocial information • GC provides reassurance • GC uses partnering statements • GC uses self-disclosure • GC expresses concern • GC expresses empathy	• *Do you want to talk over your concerns with your sister?* • *You seem worried about your husband's response.* • *It is natural to be worried.*
Facilitation of Cognitive Processing	• GC uses partnering and activation statements • GC asks medical questions	• *How do you think you will deal with not knowing definitively?* • *How do you think your husband would respond to a child with Down syndrome?* • *Any other causes for increased stress?*

Table 2. Emotional expression, cognitive integration, and meaning making in simulated talk (adapted from Ellington et al., 2011)

Type of client talk	**LIWC category**	**Dialogue examples**
Client expresses psychosocial and emotional concerns	Positive emotions (ex: happy, love)	*We have a very supportive and loving family.*
	Negative emotions (ex: sad, angry)	*I have always been worried about getting cancer.*
Client shows evidence of cognitive processing of genetic risk information and informed decision-making	Cognitive mechanisms (ex: think, because, know, consider)	*I think I would like to have the genetic test because…*
		I have been eating a lot of bad foods and I wonder if that could cause my baby to get Down syndrome.

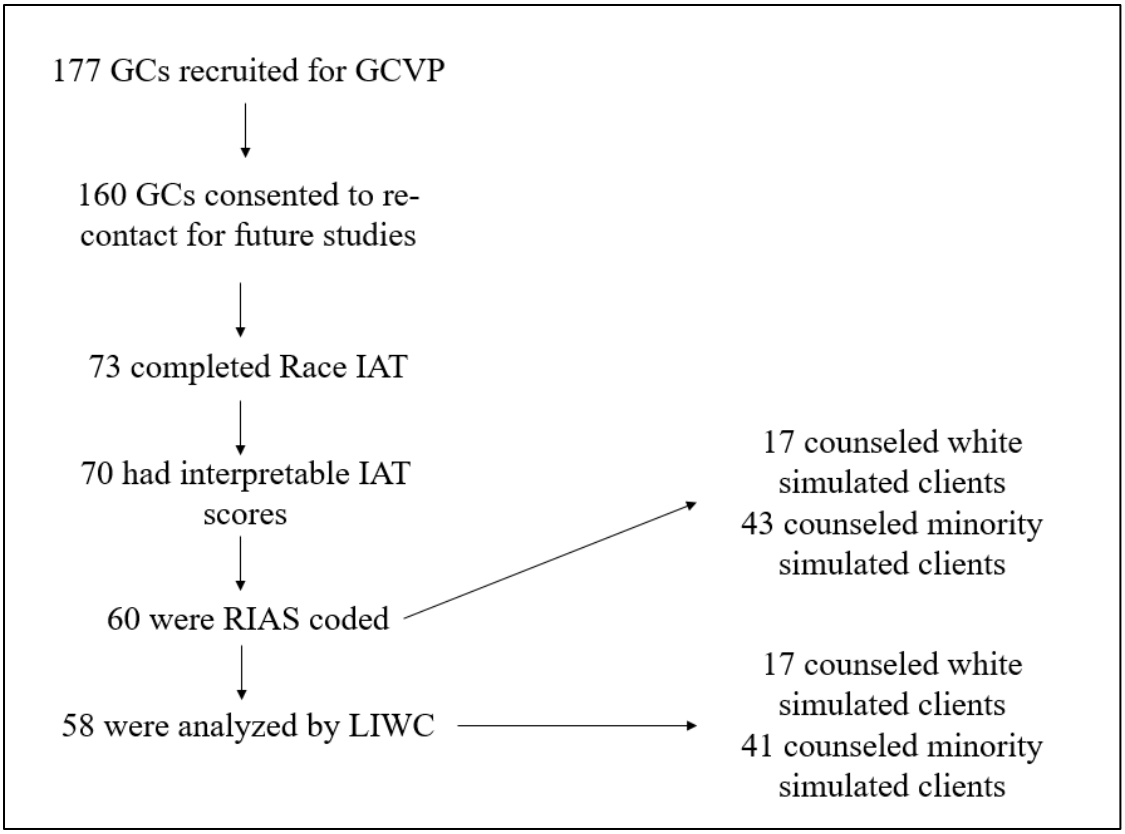

Figure 1. Participant flow through study

Table 3. Characteristics of Study Population

	Overall
N	60
Scenario	
Prenatal (%)	35 (58.3)
Cancer (%)	25 (41.7)
Spouse present (%)	26 (43.3)
IAT (mean (sd))	0.42 (0.36)
IAT category (%)	
Slight pro-Black	2 (3.3)
Little to no preference	12 (20.0)
Slight pro-white	13 (21.7)
Moderate pro-white	17 (28.3)
Strong pro-white	16 (26.7)
Age in 2003-2004 (%)	
21-30	17 (28.3)
31-40	23 (38.3)
41-50	14 (23.3)
51+	6 (10.0)
Gender	
Female	55 (91.7)
Male	5 (8.2)
GC Race (%)	
Asian	4 (6.7)
White	55 (91.7)
Multiracial	1 (1.7)
GC Ethnicity (%)	
Hispanic or Latino	1 (1.7)
NSGC Region (%)	
1: CT, MA, ME, NH, RI, VT, CN Maritime provinces	3 (5.0)
2: DC, DE, MD, NJ, NY, PA, VA, WV, PR, VI, Quebec	9 (15.0)
3: AL, FL, GA, KY, LA, MS, NC, SC, TN	15 (25.0)
4: AR, IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, OK, SD, WI, Ontario	11 (18.3)
5: AZ, CO, MT, NM, TX, UT, WY, Alberta, Manitoba, Sask.	8 (13.3)
6: AK, CA, HI, ID, NV, OR, WA, British Columbia	14 (23.3)

Table 4. Simulated Client Talk - LIWC: Descriptive Statistics

Outcome variable (mean (sd))	Overall	White	Minority	p-value
n	58	17	41	NA
Total client words used	795.47 (398.96)	744.94 (298.53)	816.41 (434.16)	0.54
Client negative emotion words	12.84 (10.32)	11.47 (7.41)	13.41 (11.35)	0.52
Client negative emotion words - % of all words	1.52 (0.74)	1.48 (0.69)	1.54 (0.77)	0.77
Client positive emotion words	34.02 (21.49)	28.89 (17.59)	36.15 (22.77)	0.24
Client positive emotion words - % of all words	4.31 (1.90)	4.01 (1.98)	4.43 (1.88)	0.45
Client cognitive process words	120.61 (68.64)	116.42 (52.93)	122.34 (74.72)	0.77
Client cognitive process words - % of all words	14.82 (2.31)	15.24 (2.76)	14.65 (2.11)	0.38

Table 5. Results of Multiple Regression Analyses of Client Emotional and Cognitive Processing

Outcome variable	Client negative emotion words (LIWC)		Client positive emotion words (LIWC)		Client cognitive process words (LIWC)	
	B (95% CI)	*P* value	B (95% CI)	*P* value	B (95% CI)	*P* value
IAT score	-0.32 (-0.83 to 0.18)	0.20	-0.22 (-0.98 to 0.54)	0.56	0.40 (-3.73 to 4.53)	0.85
Client race (White = reference)	-0.07 (-0.32 to 0.19)	0.60	-0.04 (-0.42 to 0.34)	0.83	-0.34 (-2.40 to 1.73)	0.75
IAT*Client race interaction (white = reference)	0.25 (-0.30 to 0.81)	0.37	0.46 (-0.38 to 1.30)	0.28	-0.80 (-5.35 to 3.74)	0.73
Scenario (prenatal = reference)	-0.28 (-43 to -0.13)	<0.001	-0.23 (-0.46 to -0.01)	0.04	-1.36 (-2.59 to -0.14)	0.03
Correlation coefficient (adjusted R^2)	0.24 (0.18)	0.01	0.12 (0.06)	0.14	0.10 (0.04)	0.20

Table 6. Genetic Counselor Talk - RIAS: Descriptive Statistics

Outcome variable (mean (sd))	Overall	White	Minority	p-value
GC total statements	686.3 (183.62)	651.24 (147.33)	705.53 (197.35)	0.36
GC emotional facilitation	184.50 (74.11)	162.24 (48.00)	193.30 (80.98)	0.15
GC emotional facilitation - % of all talk	26.46 (5.73)	24.95 (4.63)	27.72 (5.81)	0.20
GC cognitive facilitation	109.10	88.53	117.23	0.04

	(49.24)	(32.29)	(52.62)	
GC cognitive facilitation - % of all talk	15.60 (4.57)	13.52 (4.14)	16.43 (4.51)	0.02

Table 7. Results of Multiple Regression Analyses of Genetic Counselor Emotional and Cognitive Facilitation

Outcome variable*	**Genetic counselor emotional facilitation (RIAS)**		**Genetic counselor cognitive facilitation (RIAS)**	
	B (95% CI)	***P* value**	**B (95% CI)**	***P* value**
IAT score	-0.50 (-11.13 to 10.13)	0.93	0.64 (-7.88 to 9.16)	0.88
Client race (White = reference)	4.22 (-1.10 to 9.54)	0.12	3.91 (-0.36 to 8.18)	0.07
IAT*Client race interaction (White = reference)	-1.88 (-13.65 to 9.89)	0.75	-1.23 (-10.67 to 8.21)	0.79
Correlation coefficient (adjusted R^2)	0.09 (0.02)	0.30	0.16 (0.09)	0.08

*Models in this table adjusted for scenario (prenatal vs. cancer), but no significant associations were observed.

REFERENCES

Blair, I. V., Judd, C. M., Havranek, E. P., & Steiner, J. F. (2010). Using Community Data to Test the Discriminate Validity of Ethnic/Racial Group IATs. *Zeitschrift Fur Psychologie*, *218*(1). https://doi.org/10.1027/0044-3409/a000006

Blair, I. V., Steiner, J. F., Fairclough, D. L., Hanratty, R., Price, D. W., Hirsh, H. K., … Havranek, E. P. (2013). Clinicians' implicit ethnic/racial bias and perceptions of care among Black and Latino patients. *Annals of Family Medicine*, *11*(1), 43–52. https://doi.org/10.1370/afm.1442

Cooper, L. A., Roter, D. L., Carson, K. A., Beach, M. C., Sabin, J. A., Greenwald, A. G., & Inui, T. S. (2012). The Associations of Clinicians' Implicit Attitudes About Race With Medical Visit Communication and Patient Ratings of Interpersonal Care. *American Journal of Public Health*, *102*(5), 979–987. https://doi.org/10.2105/AJPH.2011.300558

Elfenbein, H. A., & Ambady, N. (2003). Universals and Cultural Differences in Recognizing Emotions. *Current Directions in Psychological Science*, *12*(5), 159–164. https://doi.org/10.1111/1467-8721.01252

Ellington, L., Kelly, K. M., Reblin, M., Latimer, S., & Roter, D. (2011). Communication in genetic counseling: cognitive and emotional processing. *Health Communication*, *26*(7), 667–675. https://doi.org/10.1080/10410236.2011.561921

Erby, L. A. H., Roter, D. L., & Biesecker, B. B. (2011). Examination of standardized patient performance: accuracy and consistency of six standardized patients over time. *Patient Education and Counseling*, *85*(2), 194–200. https://doi.org/10.1016/j.pec.2010.10.005

FitzGerald, C., & Hurst, S. (2017). Implicit bias in healthcare professionals: a systematic review. *BMC Medical Ethics*, *18*(1), 19. https://doi.org/10.1186/s12910-017-0179-8

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, *85*(2), 197–216. https://doi.org/10.1037/0022-3514.85.2.197

Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. R. (2009). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology*, *97*(1), 17–41. https://doi.org/10.1037/a0015575

Guan, Y., Roter, D. L., Wolff, J. L., Gitlin, L. N., Christensen, K. D., Roberts, J. S., … Erby, L. H. (2018). The impact of genetic counselors' use of facilitative strategies on cognitive and emotional processing of genetic risk disclosure for Alzheimer's

disease. *Patient Education and Counseling*, *101*(5), 817–823. https://doi.org/10.1016/j.pec.2017.11.019

Hall, J. A., Ship, A. N., Ruben, M. A., Curtin, E. M., Roter, D. L., Clever, S. L., … Pounds, K. (2015). Clinically Relevant Correlates of Accurate Perception of Patients' Thoughts and Feelings. *Health Communication*, *30*(5), 423–429. https://doi.org/10.1080/10410236.2013.865507

Hall, W. J., Chapman, M. V., Lee, K. M., Merino, Y. M., Thomas, T. W., Payne, B. K., … Coyne-Beasley, T. (2015). Implicit Racial/Ethnic Bias Among Health Care Professionals and Its Influence on Health Care Outcomes: A Systematic Review. *American Journal of Public Health*, *105*(12), e60-76. https://doi.org/10.2105/AJPH.2015.302903

Kahn, J. H., Tobin, R. M., Massey, A. E., & Anderson, J. A. (2007). Measuring emotional expression with the Linguistic Inquiry and Word Count. *The American Journal of Psychology*, *120*(2), 263–286.

Kelly, K. M., Ellington, L., Schoenberg, N., Agarwal, P., Jackson, T., Dickinson, S., … Andrykowski, M. (2014). Linking Genetic Counseling Content to Short-Term Outcomes in Individuals at Elevated Breast Cancer Risk. *Journal of Genetic Counseling*, *23*(5), 838–848. https://doi.org/10.1007/s10897-014-9705-8

Kelly, K. M., Ellington, L., Schoenberg, N., Jackson, T., Dickinson, S., Porter, K., … Andrykowski, M. (2015). Genetic counseling content: How does it impact health behavior? *Journal of Behavioral Medicine*, *38*(5), 766–776. https://doi.org/10.1007/s10865-014-9613-2

Liess, A., Simon, W., Yutsis, M., Owen, J. E., Piemme, K. A., Golant, M., & Giese-Davis, J. (2008). Detecting emotional expression in face-to-face and online breast cancer support groups. *Journal of Consulting and Clinical Psychology*, *76*(3), 517–523. https://doi.org/10.1037/0022-006X.76.3.517

Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). The Development and Psychometric Properties of LIWC2015, 26.

R Core Team. (2018). R: A language and environment for statistical computing (Version 3.5.0). Vienna, Austria: R Foundation for Statistical Computing. Retrieved from https://www.R-project.org/.

Roter, D., Ellington, L., Erby, L. H., Larson, S., & Dudley, W. (2006). The Genetic Counseling Video Project (GCVP): models of practice. *American Journal of Medical Genetics. Part C, Seminars in Medical Genetics*, *142C*(4), 209–220. https://doi.org/10.1002/ajmg.c.30094

Roter, D., & Larson, S. (2002). The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions. *Patient Education and Counseling*, *46*(4), 243–251. https://doi.org/10.1016/S0738-3991(02)00012-5

Schaa, K. L., Roter, D. L., Biesecker, B. B., Cooper, L. A., & Erby, L. H. (2015). Genetic counselors' implicit racial attitudes and their relationship to communication. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, *34*(2), 111–119. https://doi.org/10.1037/hea0000155

Zestcott, C. A., Blair, I. V., & Stone, J. (2016). Examining the Presence, Consequences, and Reduction of Implicit Bias in Health Care: A Narrative Review. *Group Processes & Intergroup Relations : GPIR*, *19*(4), 528–542. https://doi.org/10.1177/1368430216642029

CHAPTER THREE: INDIVIDUATION AND IMPLICIT RACIAL BIAS IN GENETIC COUNSELING COMMUNICATION

ABSTRACT

Objective: Recent theory and evidence suggest that social-cognitive processes of categorization and individuation may be associated with implicit stereotypes and attitudes about members of other social groups. This study applies concepts of individuation and categorization to processes of information exchange and interpersonal dynamics within genetic counseling sessions to explore the relationship between genetic counselors' (GCs') implicit racial bias and these aspects of counseling communication.

Methods: Secondary analysis of a nationally representative sample of genetic counseling sessions with white and minority (Black and Latino) simulated clients (SCs) was conducted. A subset of the GCs (n=60) completed a Race Implicit Association Test (IAT). The Roter Interaction Analysis System (RIAS) was used to characterize individuation of clinical information and code GC and SC communication behaviors. The main outcome measure was the ratio of personalized to generalized clinical information provided by GCs. We also investigated client-centeredness of communication. Multiple linear regressions were performed to relate these outcomes to GCs' IAT scores, SC race, and statistical interaction between GCs' IAT scores and SC race.

Results: GCs' implicit racial bias had different effects on GCs' provision of information depending on SC race ($p<0.05$). In sessions with minority SCs, higher (more pro-white) IAT scores were associated with GCs being less likely to provide personally-framed clinical information relative to sessions with white SCs. Similarly, higher IAT score was associated with fewer facilitation and activation statements ($p=0.04$) by GCs when with minority SCs. Differences were also found in SC communication: minority relative to

white SCs provided less psychosocial and lifestyle information ($p<0.05$), and asked fewer medical questions ($p<0.01$) when with GCs with higher IAT scores.

Conclusions: Genetic counseling communication may reflect differential processes of individuation and categorization based on client race. Clinical as well as interpersonal communication may be sensitive to the effects of GCs' implicit racial bias.

INTRODUCTION

> Here is what I sometimes suspect my face signifies to other Americans: an invisible person, barely distinguishable from a mass of faces that resemble it. A conspicuous person standing apart from the crowd and yet devoid of any individuality. (Yang, 2011)

Racially discordant medical interactions have been associated with less patient-centered communication (Johnson, Roter, Powe, & Cooper, 2004), less patient positive affect (Cooper et al., 2003; Johnson et al., 2004), less relationship-building (Siminoff, Graham, & Gordon, 2006), and less patient satisfaction (Cooper et al., 2003) during medical visits. While studies suggest that a more patient-centered communication style matters more than racial or ethnic concordance for patient outcomes (Adams et al., 2015; Alegría et al., 2013), implicit racial bias may explain racial differences in communication and interpersonal care during medical visits. Previous studies have associated implicit racial bias with poorer ratings of care (Blair et al., 2013; Cooper et al., 2012; Penner et al., 2010) and less patient-centered communication (Cooper et al., 2012; Schaa, Roter, Biesecker, Cooper, & Erby, 2015) during medical visits.

In the field of genetic counseling, both racial discordance and implicit bias are likely to affect the care of racially diverse clients. The profession remains racially homogeneous, with 91% of genetic counselors (GCs) in the U.S. and Canada reporting their race as white in the 2016 National Society of Genetic Counselors Professional Status Survey (Baggett et al., 2016). Interactions with minority clients are therefore likely to be racially discordant. Furthermore, most GCs, like others in the U.S. population, have some degree of pro-white implicit bias (Schaa et al., 2015). Racial bias has been associated with less client-centered communication in genetic counseling interactions with minority simulated clients (Schaa et al., 2015). Potentially compounding this is the importance of relationship and trust in addressing sensitive topics and decisions related to genetic risk. Only a few studies have tested interventions to reduce health care providers' implicit bias and its negative effects on medical communication and outcomes (Zestcott, Blair, & Stone, 2016). To our knowledge, no interventions have been developed for GCs. Applying concepts from social psychological research on intergroup processes to genetic counseling may help to identify opportunities for intervention.

The concepts of individuation and categorization may be especially relevant in understanding how implicit bias affects the genetic counseling process. Brewer (1998) proposes that when people are perceived as being a member of an outgroup, they are more likely to form impressions using a category-based mode of processing information, in which the perceiver tends to process and encode information about an individual as it relates to a stereotypical category to which that individual belongs. By contrast, one is more likely to form impressions using an individual-based processing mode (individuation), in which a perceiver tends to process and integrate information that is

unique to that individual and distinguishes him or her from other individuals. Activation of categorization or individuation processes may influence how GCs communicate with patients. Failure to recognize clients' individual characteristics may impede development of a therapeutic relationship and may explain the associations between clinician implicit bias and poorer interpersonal care observed in empirical studies (Cooper et al., 2012; Schaa et al., 2015).

Categorization and individuation may also be related to GCs' ability to effectively partner with a client and establish shared goals. Gaertner and colleagues found that inducing individuals to "re-categorize" themselves by creating a common identity led to more positive evaluations of outgroup members (Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993). It may be more difficult for a GC to construct a shared identity with a client if he or she holds strong stereotypes about the group to which that client belongs. Conversely, GCs who are more effective at eliciting and responding to clients' individual characteristics may also be more effective at creating a shared identity and partnering around mutual goals.

We wondered whether processes of individuation and categorization may be evident in both information exchange and interactive dynamics during genetic counseling sessions. We also sought to relate these concepts to implicit racial bias and previous research linking implicit racial bias to less patient-centered communication. The objectives of the present study are 1) to investigate the relationship between implicit racial bias and individuation using a novel measure of personally contextualized clinical information, 2) to explore potential correlates of implicit bias with interpersonal elements of GCs' communication, and 3) to explore potential reciprocal effects of GCs' implicit

bias on simulated clients' (SC) behavior. We hypothesized that higher pro-white implicit bias would be associated with less personalized communication with minority SCs, but not with white SCs.

METHODS

Procedure

Genetic Counseling Video Project. This study is a secondary analysis of a subset of videotaped simulated genetic counseling sessions from a previous study of genetic counseling communication, the Genetic Counseling Video Project (Roter, Ellington, Erby, Larson, & Dudley, 2006). Briefly, GCs practicing in the U.S. and Canada were recruited from national meetings in 2003 and 2004 and asked to participate in videotaped simulated counseling sessions.

Six SCs were cross-trained to portray two client scenarios: (1) a pregnant woman of advanced maternal age seeking pre-amniocentesis counseling, and (2) a woman with a family history of breast and ovarian cancer seeking information about BRCA1/2 genetic testing. Female SCs included two non-Hispanic Caucasian, two African American, and two Hispanic Latino actors. In approximately 50% of the sessions, an ethnicity-matched male spouse accompanied the female SC. SCs performed with a high degree of accuracy and consistency over time (Erby et al., 2011).

Implicit Association Test (IAT). Implicit racial bias was reported previously in a study by Schaa, Roter, Biesecker, Cooper, & Erby (2015) using the Project Implicit® Black:White Race Implicit Association Test (IAT). The current study uses these scores as an independent variable. The IAT has been widely used to measure implicit bias in other

studies of health care professionals (Cooper et al., 2012; FitzGerald & Hurst, 2017; W. J. Hall et al., 2015). The IAT methodology is detailed elsewhere (Greenwald, Nosek, & Banaji, 2003). Briefly, the IAT score is based on an algorithm that calculates the mean standardized difference in response time to associate the target concept (black or white race) with an attribute (word with a positive or negative connotation). The scores range from +2 (indicating high implicit pro-white bias) to -2 (indicating high implicit pro-black bias), with zero indicating no relative implicit preference.

Roter Interaction Analysis System (RIAS). RIAS coding is a widely used coding system applied to communication in a variety of medical settings including genetic counseling (Roter et al., 2006; Roter & Larson, 2002). RIAS codes were combined to produce meaningful categories to analyze GC and SC communication. RIAS categories used in our analyses are shown in Table 8 and Table 9.

Data Analyses

Data were analyzed using R Statistical Software, version 3.5.0 (R Core Team, 2018). For all outcome variables, multiple linear regressions were performed with GC's IAT score, dichotomized SC race (white or minority), and the interaction term between IAT score and dichotomized SC race as the main predictors. Additional covariates considered for the model were scenario (prenatal vs. cancer) and presence of spouse (absent or present). Effects of these covariates are presented as unstandardized coefficients.

Personally-contextualized information. The outcome variable was calculated as a ratio of personalized to generalized clinical information. The sum of GC talk that was

RIAS-coded as personally-framed medical and therapeutic information was divided by the sum of RIAS-coded generally-framed medical and therapeutic information. To approximate a normal distribution of the outcome variable, four outliers were omitted from analysis following sensitivity analyses.

Interpersonal dynamics. Multiple linear regression analyses were performed to explore the relationship between explanatory variables and each of the individual components of the client centeredness score. When the outcome variable deviated from a normal distribution, outcomes were natural log or square root transformed, or outliers were omitted following a sensitivity analysis.

RESULTS

Among 73 GCVP participants who completed the Race IAT, a total of 60 had both interpretable IAT scores and had videotaped a session that had been RIAS-coded. Participant flow through the study is summarized in Figure 2.

Personalization of Information

On average, GCs gave personally framed clinical information 103 times per session (s.d.=45) and gave general population-framed clinical information an average of 199 times per session (s.d.=68). The average ratio of personalized to generalized clinical information in this sample was 0.58 (s.d. = 0.42). In the adjusted model, the interaction between SC race and IAT score was statistically significant (β=-0.33, p=0.04), indicating that, among minority SCs, GCs with higher (more pro-white) IAT scores were less likely to provide personally-framed medical information. The adjusted model also showed a significant effect of race, indicating that GCs with lower IAT scores were more likely to

provide personally-framed medical information to minority SCs relative to white SCs. GCs provided a higher ratio of personalized to generalized information in cancer sessions than in prenatal sessions, and scenario was included as a covariate in the regression model (data not shown).

Client-Centered Communication

Descriptive statistics for GC and SC communication are presented in Table 11. GCs were significantly more emotionally responsive and made more facilitation and patient activation statements with minority SCs than with white SCs. However, minority SCs asked fewer psychosocial questions and gave less psychosocial information relative to white SCs.

In adjusted analyses, statistical interaction between IAT score and SC race was significant for three outcomes: GC facilitation and client activation, SC provision of psychosocial and lifestyle information, and SC asking medical questions. For GC facilitation and activation, the negative interaction coefficient (β=-0.91, p=0.04) indicates that, when counseling minority SCs, GCs with higher IAT scores were less likely to use facilitation and activation strategies with minority relative to white SCs. For SCs' provision of psychosocial and lifestyle information and SCs' asking medical questions, there were also negative interactive coefficients (β=-1.26, $p<0.05$; β=-1.61, $p<0.01$, respectively). This indicates that minority SCs were less likely to give psychosocial and lifestyle information and to ask medical questions when counseled by GCs with higher IAT scores.

DISCUSSION

Personally-Contextualized Information

Consistent with our hypotheses, higher pro-white implicit bias was associated with GCs being less likely to give personally-framed information when they counseled minority SCs relative to white SCs. Our novel measure of personalization of information was informed by theories and evidence about the social cognitive processes of categorization and individuation (Brewer, 1998; Gaertner et al., 1993; Hugenberg, Miller, & Claypool, 2007; Hugenberg, Young, Bernstein, & Sacco, 2010). Our results suggest that implicit bias interferes with GCs' ability to integrate minority SCs' individual characteristics and needs on an informational level, not just an interpersonal level.

Although our intention in exploring the framing of clinical information was to investigate its role in individuation, personal framing of information has also been associated with learning outcomes for genetic counseling clients. In an earlier analysis of the role of this variable, Roter and colleagues found that study participants with limited literacy skills asked to watch the simulated sessions learned more when more of the information given in the session was personally contextualized (2009). A qualitative study of genetic counseling in the cancer setting also found that patients preferred information that was more relevant to their personal context (Joseph et al., 2017). Given our findings about racial bias, this suggests that failure to personally contextualize information may disproportionately affect clients who are both minorities and low-literate.

Interpersonal Dynamics

We found associations in the hypothesized direction between implicit bias and some of the interpersonal dynamics of genetic counseling sessions, specifically GCs' facilitation and activation statements and SCs' provision of psychosocial information and asking medical questions. The components that comprise GCs' facilitation and activation statements include asking for opinion, asking for permission, asking for reassurance, and checking for understanding. By eliciting clients' perspectives, thought processes, and reactions, GCs not only learn more individuating information, but also convey the importance of the client's opinions and experiences. From the perspective of intergroup processes, facilitation and activation statements may be important in "re-categorizing" by creating a shared identity around mutual goals, as described by Gaertner and colleagues (1993).

The negative relationship between implicit bias and SCs' giving lifestyle and psychosocial information may reflect a reciprocal effect through which pro-white bias cues lack of interest in psychosocial and lifestyle information, information that tends to be uniquely identifying. The failure to elicit this aspect of a client's experience would be consistent with categorical processing. Minority clients may also be less willing to disclose personal information if they perceive the GC as being biased or showing disrespect or insensitivity. Minority clients may feel that they have less power in the relationship to raise non-medical matters, which they may perceive as being less relevant to the conversation. Additionally, minority clients may accurately perceive GCs' implicit bias, which may affect their level of trust and willingness to disclose psychosocial and lifestyle information or ask questions.

We found significant effects of GCs' IAT scores and the interaction between IAT and SC race on the number of questions asked by SCs: relative to white SCs, minority SCs asked fewer medical questions when GCs had higher pro-white bias. Frequency of SC medical questions in this sample was low, with a mean of 3.6 questions asked per session. However, other studies have found associations between patient race and question-asking. In a study of 109 oncologist-patient interactions, Eggly and colleagues (2011) found that black patients asked fewer questions and proportionally fewer direct questions of their oncologist than white patients, even after adjusting for education and income level. The authors suggest that this difference may have been due to patients' perceptions of relative power in the interaction and patients' reluctance to challenge the implicit physician-patient hierarchy. Although our study found no significant differences by race in the number of SC medical questions, we did find significant associations with IAT score and IAT-race interaction. Perhaps clinician racial bias contributes to the interactive dynamics of a medical visit, which subsequently influence patients' question-asking.

Practice Implications

There are multiple reasons to suggest that GCs should tailor medical information to the individual client. Past studies suggest that low-literate genetic counseling patients prefer (Joseph et al., 2017) and learn more from (Roter et al., 2009) personally contextualized information. Our results also suggest that GCs' implicit racial bias can affect the extent to which they tailor medical information to the individual client. This may be an added disadvantage for clients who are both minorities and low-literate, since they may be less likely to receive personally-contextualized information and therefore

may learn less. If GCs provided personally contextualized information more consistently, this could benefit all clients with low literacy. The concept of individuation may be useful in guiding future research on implicit bias and interventions to reduce its negative effects on communication in genetic counseling and other health care settings.

LIMITATIONS

This is a secondary analysis of a dataset that was intended to generate hypotheses, but which is statistically underpowered to detect associations with small but potentially meaningful clinical implications. Since this sample of GCs was racially homogeneous, we were also unable to assess effects of GC race on communication. Additionally, there were few GCs in the sample with pro-black or neutral implicit bias on IAT, which limits our ability to identify patterns in communication for these individuals.

We combined Black and Latino SCs into a single category to maximize statistical power, which limits our ability to detect a difference in relationships between IAT score and cognitive or emotional exchange between the Black and Latino subgroups. However, this approach is consistent with the conceptualization of Black:White implicit bias as reflecting general in-group versus out-group social preferences (Greenwald, Poehlman, Uhlmann, & Banaji, 2009). Additionally, previous studies have found similar levels of implicit bias against both Blacks and Hispanics using separate IATs to evaluate both Black:White and Hispanic:White preferences among health care providers (Blair et al., 2013) and community members (Blair, Judd, Havranek, & Steiner, 2010; Blair et al., 2013).

CONCLUSION

Categorization, individuation, and the ability to create a shared in-group identity may influence how information is exchanged and the interpersonal dynamics of a genetic counseling interaction. Communication interventions that target individuation skills are theoretically consistent with patient-centered communication skills. Future descriptive studies and interventions that address implicit racial bias and racial discordance should consider that individuation and categorization may affect communication on multiple levels.

Table 8. RIAS codes for SC education and counseling in genetic counseling sessions (adapted from Roter et al., 2006)

Framing of clinical information	**Type of information**	**Example GC dialogue**
Personalized	Medical condition	*Based on what you told me, there is 20% chance that the genetic mutation would be found.*
	Testing and treatment	*You already had a blood test and now we are talking about a more invasive test for you, amniocentesis.*
Generalized	Medical condition	*Nobody has zero risk, most women have about a one in nine chance of developing breast cancer.*
	Testing and treatment	*There are several tests available, some are invasive and others are not.*

Table 9. RIAS codes for client-centered communication

Client-centered communication	**Numerator components**	**Denominator components**
GC communication	• GC psychosocial questions • GC gives psychosocial information • GC emotional responsiveness • GC facilitation and patient activation	• GC medical questions • GC procedural talk • GC gives biomedical education and counseling
SC communication	• SC psychosocial questions • SC gives psychosocial information • SC emotional talk • SC medical questions	• SC gives biomedical information

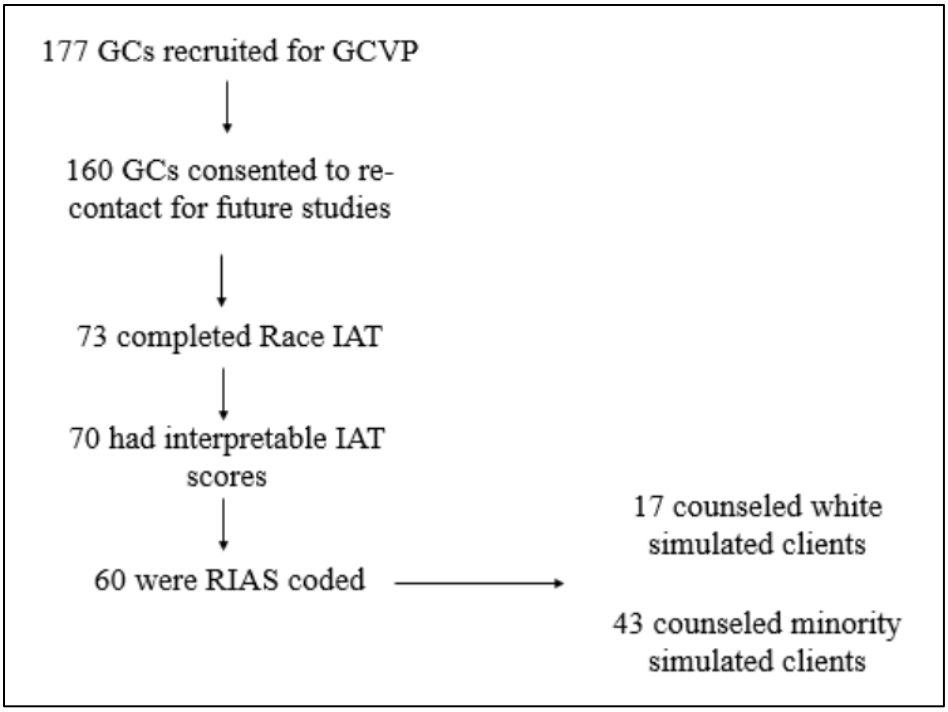

Figure 2. Participant flow through study

Table 10. Characteristics of Study Population

	Overall
N	60
Scenario	
Prenatal (%)	35 (58.3)
Cancer (%)	25 (41.7)
Spouse present (%)	26 (43.3)
IAT (mean (sd))	0.42 (0.36)
IAT category (%)	
Slight pro-Black	2 (3.3)
Little to no preference	12 (20.0)
Slight pro-white	13 (21.7)
Moderate pro-white	17 (28.3)
Strong pro-white	16 (26.7)
Age in 2003-2004 (%)	
21-30	17 (28.3)
31-40	23 (38.3)
41-50	14 (23.3)
51+	6 (10.0)
Gender	
Female	55 (91.7)
Male	5 (8.2)
GC Race (%)	
Asian	4 (6.7)
White	55 (91.7)
Multiracial	1 (1.7)
GC Ethnicity (%)	
Hispanic or Latino	1 (1.7)
NSGC Region (%)	
1: CT, MA, ME, NH, RI, VT, CN Maritime provinces	3 (5.0)
2: DC, DE, MD, NJ, NY, PA, VA, WV, PR, VI, Quebec	9 (15.0)
3: AL, FL, GA, KY, LA, MS, NC, SC, TN	15 (25.0)
4: AR, IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, OK, SD, WI, Ontario	11 (18.3)
5: AZ, CO, MT, NM, TX, UT, WY, Alberta, Manitoba, Sask.	8 (13.3)
6: AK, CA, HI, ID, NV, OR, WA, British Columbia	14 (23.3)

Table 11. Framing of clinical information provided by GCs – descriptive statistics

Outcome variable (mean (sd))	Overall	White	Minority	p-value
n	60	17	43	NA
Total medical information given by GC	301.8 (85.3)	316.2 (83.4)	296.2 (86.4)	0.42
Medical information given by GC: personal frame	102.5 (44.9)	102.0 (44.3)	102.6 (45.7)	0.96
Medical information given by GC: general frame	199.4 (67.8)	214.2 (61.1)	193.5 (70.1)	0.29
Ratio of personal to general medical information	0.58 (0.42)	0.50 (0.26)	0.61 (0.47)	0.33

Table 12. Results of Multiple Regression Analyses of GC Personalization of Clinical Information

Outcome variable	**GC ratio of personalized to generalized information (RIAS)***	
	B (95% CI)	***P* value**
IAT score	0.17 (-0.10 to 0.44)	0.21
SC race (White = reference)	0.19 (0.02 to 0.37)	0.03
IAT*SC race interaction (White = reference)	-0.32 (-0.64 to -0.01)	0.05
Correlation coefficient (adjusted R^2)	0.23 (0.17)	0.01

*Model adjusted for scenario (prenatal vs. cancer)

Table 13. Client-centered communication – Descriptive statistics

Outcome variable (mean (sd))	**Overall**	**White**	**Minority**	**p**
N	60	17	43	NA
Client-centered communication categories				
Psychosocial questions: GC	17.2 (12.6)	17.3 (12.2)	17.2 (12.9)	0.97
Gives psychosocial information: GC	42.4 (20.0)	46.9 (13.0)	40.7 (22.0)	0.28
Emotional responsiveness: GC	124.9 (61.9)	98.1 (42.2)	135.5 (65.6)	0.03
Facilitation and patient activation: GC	58.9 (36.6)	42.7 (22.1)	65.4 (39.4)	0.03
Psychosocial questions: SC	1.2 (1.0)	1.8 (1.0)	1.0 (1.0)	0.004
Gives psychosocial information: SC	40.2 (32.4)	45.0 (34.3)	38.3 (31.8)	0.03
Emotional talk: SC	16.9 (12.5)	14.5 (10.0)	17.9 (13.4)	0.35
Medical questions: SC	3.6 (2.9)	4.3 (2.9)	3.3 (2.9)	0.25
Biomedical communication categories				
Medical questions: GC	50.2 (24.0)	45.9 (25.6)	51.9 (23.4)	0.39
Procedural talk: GC	21.3 (10.1)	20.0 (8.4)	21.8 (10.7)	0.53
Gives biomedical information and counseling: GC	355.6 (98.8)	369.5 (100.3)	350.1 (98.8)	0.50
Gives biomedical information: SC	67.9 (29.1)	63.2 (24.9)	69.7 (30.7)	0.44

Table 14. Results of Multiple Linear Regression Analyses of Client Centeredness RIAS Component Categories

Outcome variable	**GC Facilitation and Client Activation**		**SC Gives Psychosocial and Lifestyle Information**		**SC Asks Medical Questions***	
	B (95% CI)	***P* value**	**B (95% CI)**	***P* value**	**B (95% CI)**	***P* value**
IAT score	0.62 (-0.12 to 1.36)	0.10	0.85 (-0.22 to 1.92)	0.12	1.29 (0.69 to 1.76)	0.01
SC race (White = reference)	0.78 (0.32 to 1.23)	0.001	0.36 (-0.30 to 1.01)	0.28	0.38 (-0.21 to 0.96)	0.20
IAT*SC race interaction (white = reference)	-0.91 (-1.76 to -0.05)	0.04	-1.26 (-2.50 to -0.02)	0.05	-1.61 (-2.71 to -0.51)	0.01
Correlation coefficient (adjusted R^2)	0.18 (0.17)	0.01	0.08 (0.03)	0.20	0.25 (0.19)	0.003

*presence of spouse included as a covariate in model; data not shown

REFERENCES

Adams, A., Realpe, A., Vail, L., Buckingham, C. D., Erby, L. H., & Roter, D. (2015). How doctors' communication style and race concordance influence African-Caribbean patients when disclosing depression. *Patient Education and Counseling*, *98*(10), 1266–1273. https://doi.org/10.1016/j.pec.2015.08.019

Alegría, M., Roter, D. L., Valentine, A., Chen, C., Li, X., Lin, J., … Shrout, P. E. (2013). Patient-Clinician Ethnic Concordance and Communication in Mental Health Intake Visits. *Patient Education and Counseling*, *93*(2), 188–196. https://doi.org/10.1016/j.pec.2013.07.001

Baggett, L. M., Banks, K., D'Angelo, A., Graf, M. D., Ellingson, M. S., & Raymond, V. M. (2016). *Professional Status Survey: Work Environment* (p. 54). National Society of Genetic Counselors.

Blair, I. V., Judd, C. M., Havranek, E. P., & Steiner, J. F. (2010). Using Community Data to Test the Discriminate Validity of Ethnic/Racial Group IATs. *Zeitschrift Fur Psychologie*, *218*(1). https://doi.org/10.1027/0044-3409/a000006

Blair, I. V., Steiner, J. F., Fairclough, D. L., Hanratty, R., Price, D. W., Hirsh, H. K., … Havranek, E. P. (2013). Clinicians' implicit ethnic/racial bias and perceptions of care among Black and Latino patients. *Annals of Family Medicine*, *11*(1), 43–52. https://doi.org/10.1370/afm.1442

Brewer, M. B. (1998). Category-based vs. Person-based Perception in Intergroup Contexts. *European Review of Social Psychology*, *9*(1), 77–106. https://doi.org/10.1080/14792779843000054

Cooper, L. A., Roter, D. L., Carson, K. A., Beach, M. C., Sabin, J. A., Greenwald, A. G., & Inui, T. S. (2012). The Associations of Clinicians' Implicit Attitudes About Race With Medical Visit Communication and Patient Ratings of Interpersonal Care. *American Journal of Public Health*, *102*(5), 979–987. https://doi.org/10.2105/AJPH.2011.300558

Cooper, L. A., Roter, D. L., Johnson, R. L., Ford, D. E., Steinwachs, D. M., & Powe, N. R. (2003). Patient-centered communication, ratings of care, and concordance of patient and physician race. *Annals of Internal Medicine*, *139*(11), 907–915.

Eggly, S., Harper, F. W. K., Penner, L. A., Gleason, M. J., Foster, T., & Albrecht, T. L. (2011). Variation in question asking during cancer clinical interactions: A potential source of disparities in access to information. *Patient Education and Counseling*, *82*(1), 63–68. https://doi.org/10.1016/j.pec.2010.04.008

Elfenbein, H. A., & Ambady, N. (2003). Universals and Cultural Differences in Recognizing Emotions. *Current Directions in Psychological Science*, *12*(5), 159–164. https://doi.org/10.1111/1467-8721.01252

Ellington, L., Kelly, K. M., Reblin, M., Latimer, S., & Roter, D. (2011). Communication in genetic counseling: cognitive and emotional processing. *Health Communication*, *26*(7), 667–675. https://doi.org/10.1080/10410236.2011.561921

Erby, L. A. H., Roter, D. L., & Biesecker, B. B. (2011). Examination of standardized patient performance: accuracy and consistency of six standardized patients over time. *Patient Education and Counseling*, *85*(2), 194–200. https://doi.org/10.1016/j.pec.2010.10.005

FitzGerald, C., & Hurst, S. (2017). Implicit bias in healthcare professionals: a systematic review. *BMC Medical Ethics*, *18*(1), 19. https://doi.org/10.1186/s12910-017-0179-8

Gaertner, S. L., Dovidio, J. F., Anastasio, P. A., Bachman, B. A., & Rust, M. C. (1993). The Common Ingroup Identity Model: Recategorization and the Reduction of Intergroup Bias. *European Review of Social Psychology*, *4*(1), 1–26. https://doi.org/10.1080/14792779343000004

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, *85*(2), 197–216. https://doi.org/10.1037/0022-3514.85.2.197

Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. R. (2009). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology*, *97*(1), 17–41. https://doi.org/10.1037/a0015575

Guan, Y., Roter, D. L., Wolff, J. L., Gitlin, L. N., Christensen, K. D., Roberts, J. S., … Erby, L. H. (2018). The impact of genetic counselors' use of facilitative strategies on cognitive and emotional processing of genetic risk disclosure for Alzheimer's disease. *Patient Education and Counseling*, *101*(5), 817–823. https://doi.org/10.1016/j.pec.2017.11.019

Hall, J. A., Ship, A. N., Ruben, M. A., Curtin, E. M., Roter, D. L., Clever, S. L., … Pounds, K. (2015). Clinically Relevant Correlates of Accurate Perception of Patients' Thoughts and Feelings. *Health Communication*, *30*(5), 423–429. https://doi.org/10.1080/10410236.2013.865507

Hall, W. J., Chapman, M. V., Lee, K. M., Merino, Y. M., Thomas, T. W., Payne, B. K., … Coyne-Beasley, T. (2015). Implicit Racial/Ethnic Bias Among Health Care Professionals and Its Influence on Health Care Outcomes: A Systematic Review. *American Journal of Public Health*, *105*(12), e60-76. https://doi.org/10.2105/AJPH.2015.302903

Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A Meta-Analysis on the Correlation Between the Implicit Association Test and Explicit

Self-Report Measures. *Personality and Social Psychology Bulletin*, *31*(10), 1369–1385. https://doi.org/10.1177/0146167205275613

Hugenberg, K., Miller, J., & Claypool, H. M. (2007). Categorization and individuation in the cross-race recognition deficit: Toward a solution to an insidious problem. *Journal of Experimental Social Psychology*, *43*(2), 334–340. https://doi.org/10.1016/j.jesp.2006.02.010

Hugenberg, K., Young, S. G., Bernstein, M. J., & Sacco, D. F. (2010). The categorization-individuation model: An integrative account of the other-race recognition deficit. *Psychological Review*, *117*(4), 1168–1187. https://doi.org/10.1037/a0020463

Johnson, R. L., Roter, D., Powe, N. R., & Cooper, L. A. (2004). Patient Race/Ethnicity and Quality of Patient–Physician Communication During Medical Visits. *American Journal of Public Health*, *94*(12), 2084–2090. https://doi.org/10.2105/AJPH.94.12.2084

Joseph, G., Pasick, R. J., Schillinger, D., Luce, J., Guerra, C., & Cheng, J. K. Y. (2017). Information Mismatch: Cancer Risk Counseling with Diverse Underserved Patients. *Journal of Genetic Counseling*, *26*(5), 1090–1104. https://doi.org/10.1007/s10897-017-0089-4

Kahn, J. H., Tobin, R. M., Massey, A. E., & Anderson, J. A. (2007). Measuring emotional expression with the Linguistic Inquiry and Word Count. *The American Journal of Psychology*, *120*(2), 263–286.

Kelly, K. M., Ellington, L., Schoenberg, N., Agarwal, P., Jackson, T., Dickinson, S., … Andrykowski, M. (2014). Linking Genetic Counseling Content to Short-Term Outcomes in Individuals at Elevated Breast Cancer Risk. *Journal of Genetic Counseling*, *23*(5), 838–848. https://doi.org/10.1007/s10897-014-9705-8

Kelly, K. M., Ellington, L., Schoenberg, N., Jackson, T., Dickinson, S., Porter, K., … Andrykowski, M. (2015). Genetic counseling content: How does it impact health behavior? *Journal of Behavioral Medicine*, *38*(5), 766–776. https://doi.org/10.1007/s10865-014-9613-2

Liess, A., Simon, W., Yutsis, M., Owen, J. E., Piemme, K. A., Golant, M., & Giese-Davis, J. (2008). Detecting emotional expression in face-to-face and online breast cancer support groups. *Journal of Consulting and Clinical Psychology*, *76*(3), 517–523. https://doi.org/10.1037/0022-006X.76.3.517

Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). The Development and Psychometric Properties of LIWC2015, 26.

Penner, L. A., Dovidio, J. F., West, T. V., Gaertner, S. L., Albrecht, T. L., Dailey, R. K., & Markova, T. (2010). Aversive racism and medical interactions with Black

patients: A field study. *Journal of Experimental Social Psychology*, *46*(2), 436–440. https://doi.org/10.1016/j.jesp.2009.11.004

R Core Team. (2018). R: A language and environment for statistical computing (Version 3.5.0). Vienna, Austria: R Foundation for Statistical Computing. Retrieved from https://www.R-project.org/.

Roter, D., Ellington, L., Erby, L. H., Larson, S., & Dudley, W. (2006). The Genetic Counseling Video Project (GCVP): models of practice. *American Journal of Medical Genetics. Part C, Seminars in Medical Genetics*, *142C*(4), 209–220. https://doi.org/10.1002/ajmg.c.30094

Roter, D. L., Erby, L., Larson, S., & Ellington, L. (2009). Oral literacy demand of prenatal genetic counseling dialogue: Predictors of learning. *Patient Education and Counseling*, *75*(3), 392–397. https://doi.org/10.1016/j.pec.2009.01.005

Roter, Debra, & Larson, S. (2002a). The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions. *Patient Education and Counseling*, *46*(4), 243–251. https://doi.org/10.1016/S0738-3991(02)00012-5

Roter, Debra, & Larson, S. (2002b). The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions. *Patient Education and Counseling*, *46*(4), 243–251. https://doi.org/10.1016/S0738-3991(02)00012-5

Rudman, L. A. (2004). Sources of Implicit Attitudes. *Current Directions in Psychological Science*, *13*(2), 79–82.

Schaa, K. L., Roter, D. L., Biesecker, B. B., Cooper, L. A., & Erby, L. H. (2015). Genetic counselors' implicit racial attitudes and their relationship to communication. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, *34*(2), 111–119. https://doi.org/10.1037/hea0000155

Siminoff, L. A., Graham, G. C., & Gordon, N. H. (2006). Cancer communication patterns and the influence of patient characteristics: Disparities in information-giving and affective behaviors. *Patient Education and Counseling*, *62*(3), 355–360. https://doi.org/10.1016/j.pec.2006.06.011

Yang, W. (2011, May 8). Paper Tigers. *New York Magazine*, (May 16, 2011). Retrieved from http://nymag.com/news/features/asian-americans-2011-5/

Zestcott, C. A., Blair, I. V., & Stone, J. (2016). Examining the Presence, Consequences, and Reduction of Implicit Bias in Health Care: A Narrative Review. *Group Processes & Intergroup Relations : GPIR*, *19*(4), 528–542. https://doi.org/10.1177/1368430216642029

CHAPTER FOUR: CLINICAL IMPLICATIONS AND FUTURE DIRECTIONS

CLINICAL IMPLICATIONS

Our hypotheses regarding the relationship between implicit bias and individuation were supported, suggesting that processes of individuation may link GCs' racial attitudes with less personalized communication behaviors. We argue that individuation is not only an internal process associated with implicit bias, but also a patient-centered counseling and communication strategy that can be taught and enhanced with potential consequences for patient education and the patient-provider relationship. In this chapter, we discuss potential implications for interventions and future directions for research.

Implications for Interventions to Reduce Implicit Bias

Interventions might target GCs' ability to cognitively shift from category-based to individual-based processing. One strategy based on the theory of individuation that has received empirical support in non-medical contexts is counterstereotypic imagery (Lai et al., 2014), a process that increases the accessibility of examples that violate a category's stereotype. Counterstereotypic imagery is conceptually related to the concept of categorization: by increasing the accessibility of counterexamples, one can start to erode the stereotype itself. As the category stereotype fades, it becomes easier to individuate. In clinical settings, it may be more acceptable to emphasize the advantages of individuation rather than confront a counselor's tendency toward categorization. For example, an intervention might enhance GCs' abilities to elicit and respond to individuating information about a client. Although it is uncertain whether countering a stereotype and inducing individuation are equivalent means of reducing implicit bias, theoretically,

consistent individuation could reduce the reinforcing effect of stereotyping and social categorization.

Communication interventions designed to enhance individuation may not fix underlying causes of racial stereotypes, but they could improve patient outcomes in racially discordant interaction. Raising awareness about specific communication differences that are associated with implicit biases (such as personalized framing of clinical information, facilitation and activation statements, client provision of lifestyle and psychosocial information, and client medical questions) could help health care professionals to monitor their communication and identify opportunities for more individualized communication. In the long term, GCs who successfully create conditions of equal power and mutual goals through effective communication may become less susceptible to stereotyping with repeated contact with members of other groups and more experience in identifying shared goals and values that facilitate partnership and trust.

FUTURE DIRECTIONS FOR RESEARCH

Future research in the genetic counseling setting should address the roles of implicit bias and individuation in actual clinical settings. To our knowledge, the effects of implicit bias on long-term outcomes of genetic counseling clients have not been investigated. In addition, a longitudinal design would allow exploration of potential mediators such as clients' trust in the GC, satisfaction with communication, and perceived discrimination.

Research and theory should also explore how implicit bias and individuation relate to similar concepts such as respect and cultural competence. Both individuation

and respect have similar implications for clinical care in that recognizing the client as a unique individual is central to both (Flickinger et al., 2016). Addressing the overlap between individuation and respect could be valuable in designing practice and training interventions to reduce the negative effects of implicit bias. For example, interventions and models to promote respect and relational skills in multicultural medical interactions, such as the RESPECT model of interviewing (Mostow et al., 2010), may also be relevant in addressing implicit bias.

While we have focused primarily on implicit racial bias, other forms of implicit bias may also be important in genetic counseling practice. Implicit disability bias could be especially relevant, as GCs routinely counsel clients affected by disability or about reproductive risks related to disability. Future research might explore whether the relationships between implicit racial bias, individuation, and patient-centeredness communication also apply to implicit biases against other marginalized identities.

REFERENCES

Flickinger, T. E., Saha, S., Roter, D., Korthuis, P. T., Sharp, V., Cohn, J., … Beach, M. C. (2016). Respecting patients is associated with more patient-centered communication behaviors in clinical encounters. *Patient Education and Counseling*, *99*(2), 250–255. https://doi.org/10.1016/j.pec.2015.08.020

Lai, C. K., Marini, M., Lehr, S. A., Cerruti, C., Shin, J.-E. L., Joy-Gaba, J. A., … Nosek, B. A. (2014). Reducing implicit racial preferences: I A comparative investigation of 17 interventions. *Journal of Experimental Psychology: General*, *143*(4), 1765–1785. https://doi.org/10.1037/a0036260

Mostow, C., Crosson, J., Gordon, S., Chapman, S., Gonzalez, P., Hardt, E., … David, M. (2010). Treating and Precepting with RESPECT: A Relational Model Addressing Race, Ethnicity, and Culture in Medical Training. *Journal of General Internal Medicine*, *25*(Suppl 2), 146–154. https://doi.org/10.1007/s11606-010-1274-4

CURRICULUM VITAE

Chenery Louise Turtle Lowe
Date of Birth: November 12, 1991
Place of Birth: San Francisco, California

EDUCATION

Johns Hopkins University Bloomberg School of Public Health/ National Human Genome Research Institute, Baltimore and Bethesda, MD, January 2019
Master of Science – Genetic Counseling

Kenyon College, Gambier, OH, May 2014
Bachelor of Arts – French

CLINICAL TRAINING

Allergy and Immunodeficiency Genetics, National Institute of Allergy and Infectious Diseases – Adult & Pediatrics
Ophthalmic Genetics, National Eye Institute – Adult & Pediatrics
Parent Project Muscular Dystrophy, Advocacy
Cancer Genetics, MedStar Washington Hospital Center – Adult
Prenatal Genetics, MedStar Washington Hospital Center – Prenatal
General Pediatric Genetics, The Johns Hopkins Hospital, Baltimore, MD – Adult & Pediatrics
Neurogenetics, Kennedy Krieger Institute – Adult & Pediatrics
Prenatal Genetics, Greater Baltimore Medical Center – Prenatal
Genetic Testing, GeneDx, Inc. - Laboratory
General Pediatric Genetics, Children's National Medical Center – Adult & Pediatrics

RESEACH EXPERIENCE

Research Assistant, Department of Pathology, Genentech, Inc., South San Francisco, CA, 2013, 2015
(Principal Investigator: Hartmut Koeppen)

PUBLICATIONS AND PRESENTATIONS

Lowe C, Beach M C, & Roter D. Does Genetic Counselor Implicit Bias Affect Cognitive and Affective Exchanges in Racially Discordant Simulations? Poster session presented at: National Human Genome Research Institute Symposium; 29-30 Nov 2018; Bethesda, MD.

Rost S, **Lowe C**, Chalouni C M, & Koeppen H. Development of Multiplex Immunofluorescence Assays to Characterize the Tumor Microenvironment. Laboratory Investigation, (Vol. 96, pp. 520A-520A). Abstract presented at: 2016 Annual Meeting United States and Canadian Academy of Pathology; 12-18 Mar 2016; Seattle, WA.

Koeppen H, **Lowe C**, Rost S. Preclinical evaluation of anti-MET antibodies for immunohistochemical staining. J Clin Oncol. 2014. 32:5s, 2014 (suppl; abstr 11103).

Rost S, **Lowe C**, Koeppen H. High variability and specificity of MET IHC antibodies presents a challenge for the identification of patients for MET-targeted Therapy. Poster session presented at: 2014 Annual Meeting United States and Canadian Academy of Pathology; 1-7 Mar 2014; San Diego, CA.